REMARKS

1. Drawings

The above action indicated that the drawings were objected to because of the issues raised in the first three paragraphs of page 2. In particular, the drawings were objected to because ports 30, 32 and 34 were not shown in Figure 1, and reference numerals 40, 42, 56, 58, 60, 62 and 64 were not shown in Figure 3. Also, the drawings did not show the filter element recited in the claims.

The enclosed drawing sheets titled "Annotated Marked-up Drawings" include proposed changes to Figures 1, 3 and 4 shown in red to add the noted reference numbers to Figures 1 and 3 and to add a filter --74-- to Figure 4. A new set of formal drawings is also enclosed with each sheet titled "Replacement Sheet".

Applicant believes the proposed drawing change and enclosed set of formal drawings sufficiently address and avoid the cited objections, and thus entry of the enclosed formal drawings into the record is requested.

2. Specification

Paragraphs 13 and 19 of the specification are hereby amended as stated above to correct minor typographical/grammatical errors noticed during the preparation of this response.

Paragraph 23 of the specification is hereby amended as stated above to reflect the addition of the filter element to Figure 4. In particular, this paragraph is amended to add number 74 and delete the indication that the filter is not shown in the drawings.

Paragraph 24 of the specification is hereby amended as suggested in the fourth paragraph of page 2 of the Office action. Specifically, "the" is replaced by --they-- at page 8, line 3, and the sentence at page 8, lines 1-4 is amended to state that the primary 30 and secondary 32 inlet ports open at different vane chambers defined by consecutive vanes.

These paragraphs are believed to be amended sufficiently to avoid the cited objections, and thus, entry into the record is requested.

3. Claims

Claims 1-3 and 7-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Jurr (DE 3932399A1). Claims 4-6 were rejected under 35 U.S.C. 103(a) as being unpatentably obvious over Jurr in view of Yumiyama et al. (U.S. Pat. No. 4,747,761).

In response, independent claims 1 and 8 (and thereby claims 2-7) are amended to recite that the primary inlet port opens to an area of expansion in the pump cylinder and that the secondary inlet port opens to an area of transition, with net expansion, between the expansion and compression areas. Further, amended claim 1 and its dependents now recites that the primary and secondary inlet ports communicate media from the sound chamber to their associated areas in the cylinder. Support for this is given in the description, for example at paragraph 22, and in the drawings, for example, in Figures 1 and 3 (as amended). In light of these amendments and the following remarks reconsideration of the patentability of the claims is thus respectfully requested.

The present invention provides an improved rotary vane type pump which has a second inlet port physically located and functionally disposed in a manner different from the prior art in several ways. As now more clearly claimed, the secondary inlet port is defined as being in communication with a net expansion transition area between expansion and compression areas inside the pump cylinder. A pump having a secondary inlet pump communicating air or other media to a transition area has been found by the inventors to provide several distinct advantages over prior art pumps. Paragraph 13 of the present application summarizes these advantages and is reproduced below (as amended above) for convenience:

> **[0013]** The use of a third, or secondary inlet, port provides a rotary vane pump having several advantages over the prior art. The inventors have determined that the use of a separate additional inlet port, rather than simply enlarging a single inlet port, increases the flow capacity of the pump. The size and location of the secondary inlet port is varied to tune the flow of the pump. For example, moving the secondary inlet port closer to the inlet and (or alternatively) making it larger will increase flow and vice versa.

> The secondary inlet has also been found to improve pump efficiency and prolong life. Moreover, the secondary inlet port, particularly when internal to a sound chamber, has significant noise reduction benefits, which can be extremely important for certain applications. The sound benefits are realized in two ways. The improvements in flow volume provided by the secondary inlet port means that it is not necessary to increase the displacement of the pump (otherwise required to achieve the same flow volume), which would increase size due to the larger cylinder bore and/or length. Further sound dampening is achieved by including a secondary inlet port that is completely internal to the housing and receives air routed through a sound chamber. The pump of the present invention can have additional cost benefits in that both of the primary and secondary inlet ports can be fed air from the same supply line and coupler fitting and passed through the same inlet filter, thus eliminating the need for redundant components.

The Jurr reference fails to teach a pump of the claimed configuration or providing the aforesaid benefits. Instead, the disclosed pump has an inlet chamber that is in communication with the expansion area of the cylinder through a number of inlet ports 6-9. Different openings between the inlet chamber and the cylinder expansion area are used to create different path lengths for intake air to travel before reaching the cylinder. Presumably, air travels different distances when passing through ports 6 and 9 than when passing through ports 7 and 8. The purpose of this is to inject air into the cylinder at different points in the frequency of the sound waves associated with the intake air. By introducing the intake air into the cylinder in two sets of opposite phase streams, the sound waves will tend to cancel each other (albeit not perfectly), and thereby reduce noise at intake through the known principle of "interference".

Thus, the sound dampening aspect of the Jurr pump operates on an entirely different principle than that of the present invention. Moreover, the Jurr pump fails to provide the additional efficiency and flow volume afforded by injected air into the transition area in the pump cylinder, by in effect, packing an additional volume of air into the cylinder prior to compression. Moreover, because the secondary inlet port is separate from the primary inlet port, its location within the transition area can be

shifted closer to either the expansion or compression areas, which affords an easy way to tune the pump for particular flow volume requirements.

In addition, claims 9 and 10 are being presented herein to recite a more particularly defined location for the secondary inlet port. Amended Figure 1 and Figure 3 illustrate how a rotating vane chamber passing by a preferred location of the secondary inlet port has a leading vane that moves inwardly and a trailing vane that moves outwardly for at least part of the time the secondary inlet port is in communication with that vane chamber. These claims depend from respective amended independent claims 1 and 8 and are believed patentable for the above reasons as well as for the additional distinguishing features claimed therein.

Applicant thus respectfully submits that the pending claims, as amended, are patentable over the prior art of record, and requests that the amended claims be entered into the record, and further that all eight pending claims be allowed to issue.

4. Fees

The amendments made herein have not increased the total number of claims beyond twenty or the number of independent claims beyond three. No fees are thus believed due for consideration of this response. Authorization is hereby given, however, to charge any fees deemed necessary to Deposit Account 17-0055.

Respectfully submitted,

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ANNOTATED MARKED-UP DRAWINGS

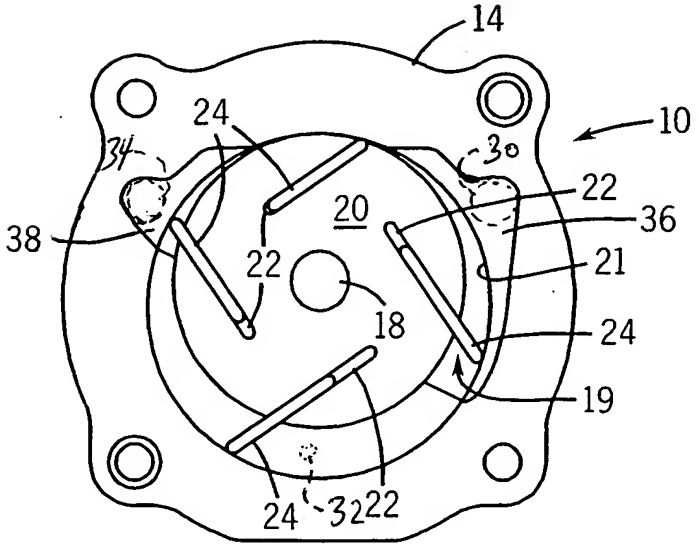

FIG. 1

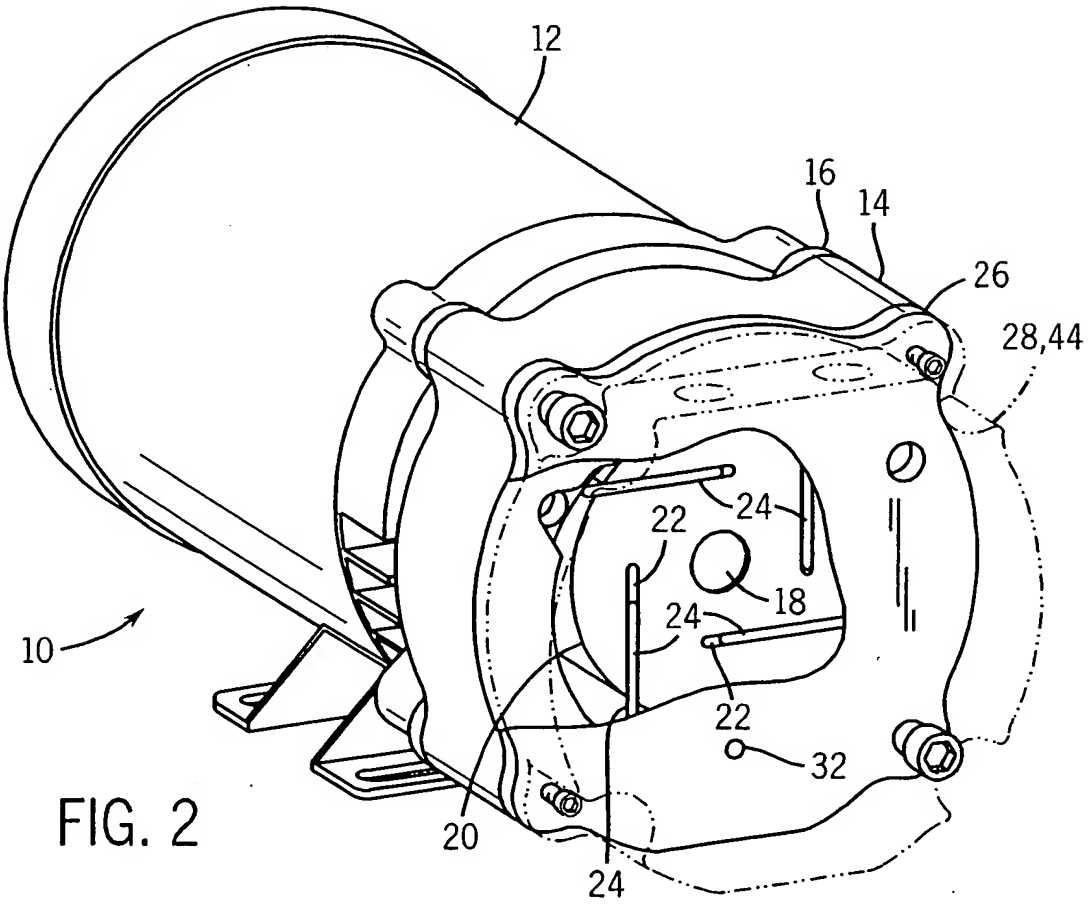

FIG. 2

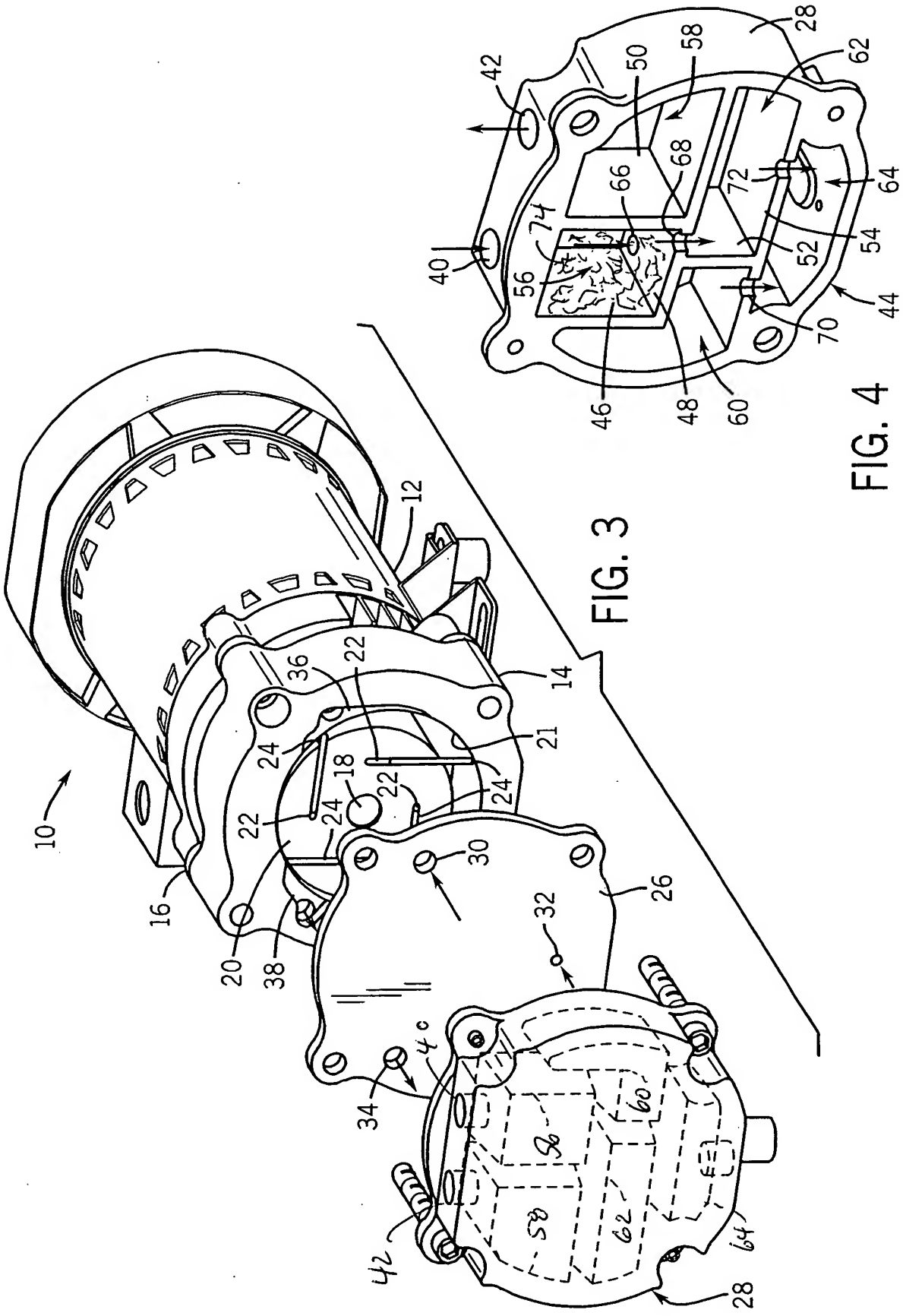
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FIG. 3

FIG. 4